AL251A-EVB-A0

Scan Converter Evaluation Board

User Manual

Version 1.0

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1. Introduction

1.1. Introduction

The AL251A-EVB-A0 is an engineering evaluation board that is used to evaluate and demonstrate the performance of the AL128 VGA to TV scan converter chip and AL251 TV to VGA scan converter chip. The board contains two 3M bits of field memory (AL422B) for AL128, and one video decoder (AL242) for AL251. An attached 80C51 microcontroller is used to control AL242 and AL251 via 2-wire Serial Bus.

The evaluation board accepts VGA analog signals or analog video signals. AL128 converts the analog VGA signal into NTSC/PAL S-video and composite video (CVBS), or analog RGB for SCART application. Additional bypass VGA output could be added via the video buffer. This implementation can display at both the monitor and TV simultaneously. Through AL251 and AL242, it accepts NTSC/PAL S-video or composite video (CVBS) and converts into VGA analog signal output or 16-bits digital RGB/YUV output.

Various switches and buttons are designed in the evaluation board for ease of demonstrating and testing the functions. For detailed descriptions of each connector, button and LED, please refer to “Block diagram and settings” section.

The board uses an external DC power adaptor (+12V/1A).

1.2. Product Overview

1.2.1. AL128

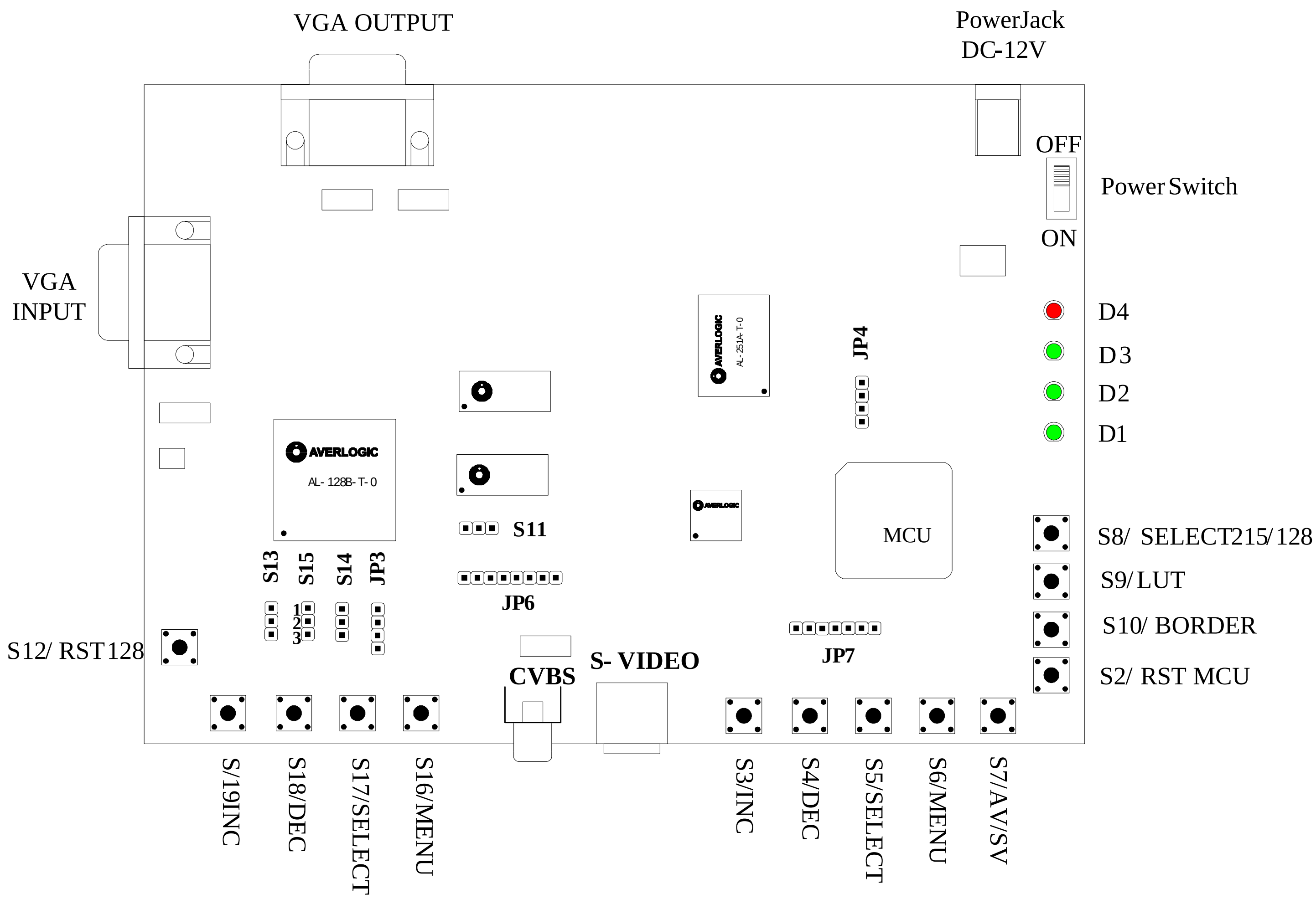
- Converts non-interlaced VGA into interlaced TV format (NTSC/PAL)
- Composite video and S-Video outputs
- Analog RGB output for SCART interface
- Highly integrated design with built-in NTSC/PAL encoder, ADC, DAC and SRAM
- High clarity 5-line anti-flicker filter
- 8 levels of sharpness control
- Supports up to full 1024x768 VGA resolution
- Automatically supports scan rate from 50 Hz up to 100 Hz
- Linear vertical and horizontal overscan/underscan control
- Zoom and freeze controls
- Four-touch-button interface with OSD (on TV) to control all key functions
- Picture panning control
- Brightness control
- Built-in color bar
- Simultaneously displays on PC and TV monitors

1.2.2. AL251

- Converts interlaced TV signal (NTSC/PAL) into non-interlaced RGB format for CRT monitorsor LCD panels
- Highly integrated design with built-in DAC,SRAM, OSD and LUT
- Built-in on-screen-display with programmable bitmap
- Auto NTSC/PAL detection
- Analog/digital non-interlaced RGB (VGA) signal output (Scan Doubled or

Deinterlaced)

- Internal RGB video lookup table (LUT) to provide gamma correction and special effects
- Overlay support for title making and complex on-screen display
- 16-bit digital RGB/YUV output



2. Hardware Section

2.1. Contents of EVB Kit

● EVB Board	X 1
● Power Adapter	X 1
● VGA Cable	X 1
● RCA Cable	X 1
● S-video Cable	X 1
● Quick Setup Guide	X 1

2.2. Hardware Installation

2.2.1. VGA TO TV Signal Hardware Installation

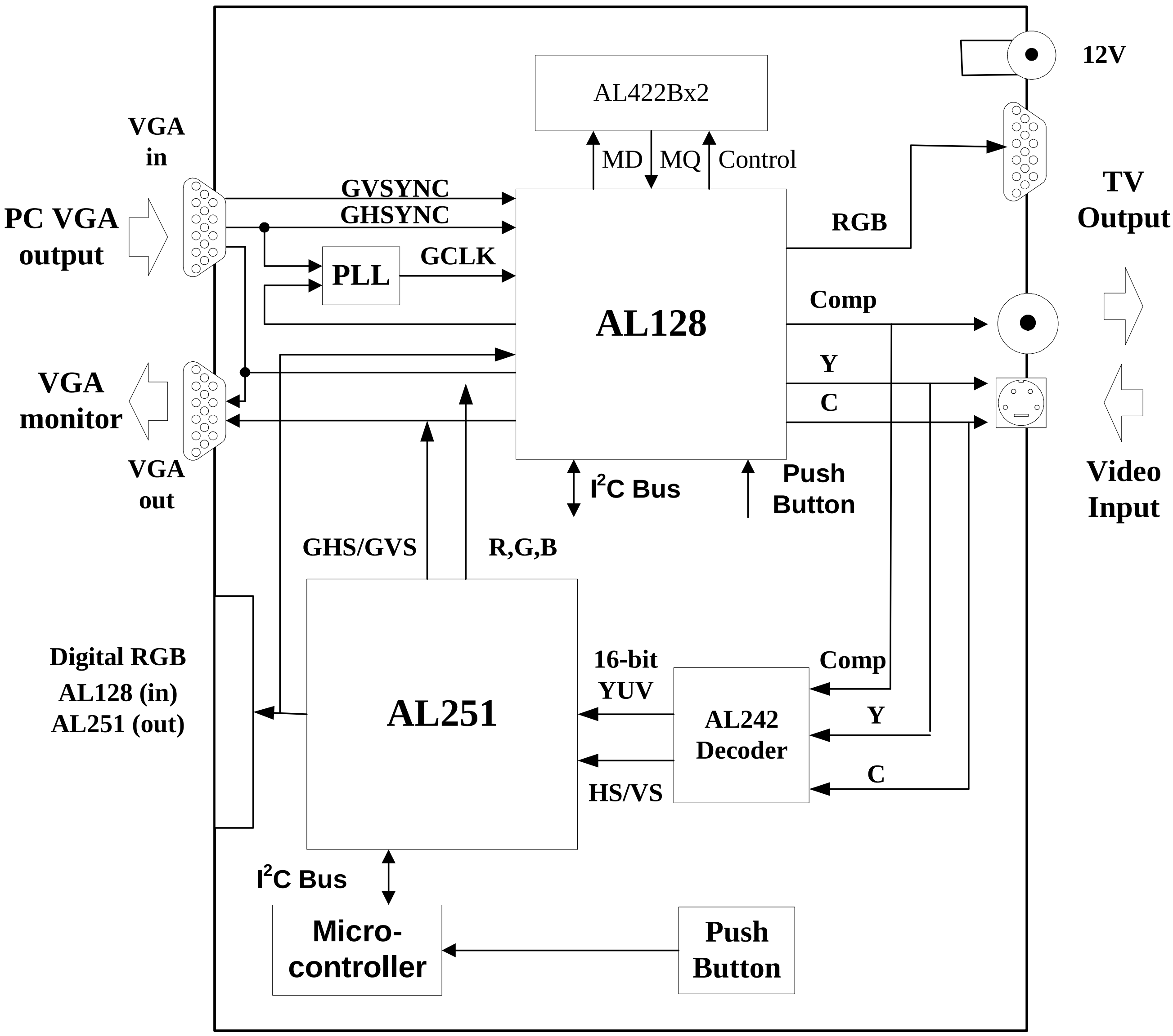
1) Connects RCA cable or S-Video cable between the EVB and TV
2) Connects VGA cable between the VGA output jack of EVB and the video signal source
3) Connects the power supply plug

2.2.2. TV Signal TO VGA Hardware Installation

1) Connects RCA cable or S-Video cable between the EVB and the video signal source
2) Connects VGA cable between the VGA output jack of EVB and VGA monitor
3) Connects the power supply plug

2.3. Block Diagram and Settings

2.3.1. Block Diagram



2.3.2. Connector Descriptions

Reference	Description
J1	Composite Video (CVBS) Input/Output
J2	VGA Output
J3	VGA Input
J4	Power Jack
JP1	Digital Video (16-bits RGB/YUV or 24-bits RGB MSB Bits) Input/Output
JP2	Backlight Controller Interface
JP3	AL128 2-wire Serial Bus Interface
JP4	AL251 2-wire Serial Bus Interface
JP5	24-bits Digital RGB LSB Interface
JP6	Analog RGB Output
CON1	S-Video Input/Output

2.3.3. Button Descriptions

Reference	Description
S1	Backlight controller switch
S2	Micro-controller reset button
S3	AL251 INCREASE button
S4	AL251 DECREASE button
S5	AL251 SELECT button
S6	AL251 MENU button
S7	AL251 input video source switch button (composite video and S-video)
S8	AL251 BORDER button
S9	AL251 LUT (Gamma correction) button
S10	AL128/AL251 Select button
S11	AL128 RSET pull-down resistance select ■ 150 ohm pull-down for RGB output ■ 90 ohm pull-down for Y/C/Composite output
S12	AL128 Reset button
S13	AL128 RGB/YC select
S14	2-wire serial bus or Vsync Programming
S15	NTSC/PAL output select
S16	AL128 MENU button
S17	AL128 SELECT button
S18	AL128 INCREASE button
S19	AL128 DECREASE button

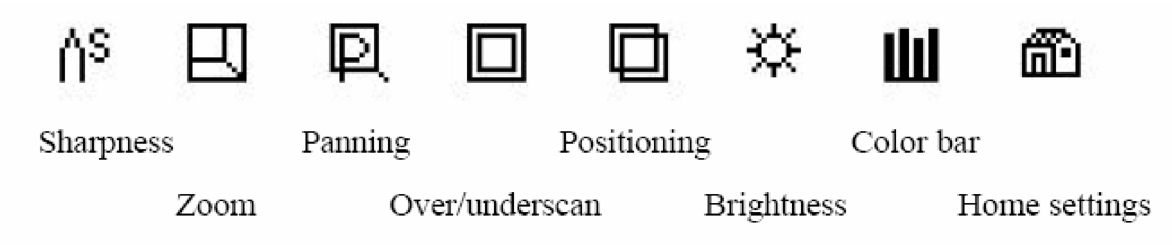
2.3.4. LED Descriptions

Reference	Description
D1	Program status indicator
D2	AL128 selected indicator (VGA to TV signal)
D3	AL251 selected indicator (TV signal to VGA)
D4	Power on indicator (Red LED)

2.4. OSD Operation

2.4.1. AL128 OSD OPERATION

1) To pop up the on screen menu, press the [AL128_Menu] button



2) To select a control function, use [AL128_Increase] or [AL128_Decrease] button to scroll to it, then press [AL128_Select] button
3) After selecting a control function, use [AL128_Select], [AL128_Increase] or [AL128_Decrease] button to adjust the control settings
4) To exit the on screen menu, press [AL128_Menu] again

2.4.2. AL251 OSD OPERATION

1) To select AL251 channel, press the [AL251/128 Select] button
2) To select the video source between composite video and S-video, press the [AL251_Source] button
3) To pop up the Brightness setting menu on screen, press the [AL251_Menu] button
4) Use [AL251_Increase] or [AL251_Decrease] button to adjust the brightness effects
5) To adjust other settings, press the [AL251_Select] button
6) Use [AL251_Increase] or [AL251_Decrease] button to adjust these control effects
7) To exit the on screen menu, press [AL251_Menu] again
8) You can use the [AL251_LUT] button to add the gamma correction table

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